# qt

Marcus Comstedt

| COLLABORATORS | | | |
|---|---|---|---|
| | *TITLE* :<br><br>qt | | |
| *ACTION* | *NAME* | *DATE* | *SIGNATURE* |
| WRITTEN BY | Marcus Comstedt | July 16, 2022 | |

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# Chapter 1

# qt

## 1.1  Who's qt?

```
                              qt 2.0

      – A QuickTime player for fast Amigas –

  ©1996–2000 Marcus Comstedt <marcus@lysator.liu.se>
    Freely distributable


      "We're not bees and we're not cats
       or bugs or horses or things like that.
       What we are is clear and absolute.
       What we are, dear doctor, is CUTE!"
                    / The Warner sibs




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               Why? When? How?

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```

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```

## 1.2  Overview

```
"Moral #4: Never ask what hot dogs are made of."
    / Yakko
```

```
qt (pronounced cute) is a QuickTime movie player for the
Amiga.  I wrote this program because I wanted something
CPU-intense to run on my 68060, so it's main purpose is to eat
computrons, the fact that it also plays movies rather nicely is
just a side effect.  :)
```

```
The requirements for running qt are:
```

- · 68020 CPU or better
- · AmigaOS 2.04 or better

```
Depending on the actual movie, and the replay mode selected,
an 020 may very well be a tad under specced...
```

```
QuickTime animation formats currently supported are:
```

- · RLE
- · Cinepak
- · Road Pizza
- · JPEG
- · SMC
- · RAW

```
Audio codecs supported are:
```

- · MACE
- · IMA4

## 1.3  Installation

```
Brain: "Pinky, are you pondering what I'm pondering?"
Pinky: "I think so, Brain, but where will we find a duck and a
  hose at this hour?"
```

Not much to say here really.  Either run the installer-script,
or just copy the binary that best matches your CPU to some
convenient place.

There are 5 binaries to select from:

qt        - Any CPU from 68020 and up
qt.020fpu - Like above but with 68881/68882 FPU
qt.030    - 68030 and up without FPU
qt.030fpu - 68030 and up with FPU
qt.040fpu - 68040 with FPU

There is no principal difference between the 5 versions,
they are just compiled with different compiler flags.


## 1.4  Using qt

                 "Moral #2: If at first you don't succeed, blame your parents!"
     / Yakko


qt can now be used both from CLI and Workbench.  CLI usage will
follow next, and Workbench usage further down on the page.


To play a movie from CLI, run the command qt with the filename
of the movie and any
                 options
                  that you feel appropriate.  If no
filename is specified, a standard ASL file requester will appear.

The metadata for the movie will now be loaded into RAM.
qt no longer loads the entire movie into RAM, so replay
should start much quicker than earlier versions.  If you
like, you can get the old behaviour back with the
                 BUFFERED
                 option.

If the loading completes without errors, a screen with a
(hopefully) appropriate resolution and color-depth will appear
and the movie will begin playing.  (See also the section on true
color replay at the bottom of this page.)  After the entire
animation has been played (both video and and audio) the program
will quit automatically, unless the LOOP option is given in which
case it starts all over again, or the NOQUIT options is given in
which case the player will pause and wait for user interaction.

To manually terminate the program, press Ctrl-C in the
CLI window, or either Ctrl-C or ESC in the replay window.

The following keys can be used to control the actual replay:

  SPACE     - Start/stop playback

```
  LEFT      - Seek one second backward
  RIGHT     - Seek one second forward
  Alt-LEFT  - Seek to beginning of movie
  Alt-RIGHT - Seek to end of movie
```

If the
                  PUBSCREEN
                   option is used, the window showing the movie
will have the normal window gadgets.  Clicking on the close
gadget will terminate the program as well.  On a CyberGraphX screen
it is possible to resize the window using the size gadget at the
bottom right of the window.  Press 'N' in the window to return
it to it's normal size.

There is also a set of gadgets controlling replay, that per default
are shown when using a pubic screen, and not when using a private screen.
These defaults can be overridden using the
                  GUI
                   option.
The five buttons on the left have the same function as the keyboard
controls described previously.  The slider shows the current timeline
position of the movie, and can be used to seek to an arbitrary position.


To play a movie from Workbench, you can use any of three methods:

* Set the DefaultTool for a movie file to qt and double click on the
  movie's icon.
* Click on the icon of a movie file, then shift-double click on qt's
  icon.
* Double click on qt's icon, and select a movie from the file requester
  that appears.  (When using this method, the movie file won't get
  checked for ToolTypes.)

There's a number of
                  ToolTypes
                   that can be set for either qt itself or
the movie (the movies ToolTypes take precedence) to affect the mode of
replay.

After qt has been launched, loading and replaying will proceed
in the same manner as for CLI operation, described above.



True color replay

If the selected movie has true color video, several replay options
exist.  These options can be controlled by several command line
switches and ToolTypes, which are listed in the
                  Options
                   section.
The exact mode used will be determined by the following rules:

* if the GRAY switch is given, the movie will be replayed in
  grayscale.

* otherwise, if the target screen is true color, the movie will be
  replayed in true color.

* otherwise, if the target screen is a HAM screen, HAM mode will be used.
  The HAM switch can be used to open a HAM screen for replay.

* otherwise, if the DITHER switch is given, the movie will be dithered
  to a color cube.

* otherwise, the color cube will be used without dithering.


Starting with qt2, these rules basically apply to non-true color movies
as well.  GRAY can always be used to make the replay grayscale, and DITHER
always has effect if the number of available colours are too few, and the
screen mode is not HAM.  DITHER and GRAY can be combined to enable dithering
when less than 256 grays are available.


## 1.5  Options

"That's a finger.  You have five of them on each hand.
 Unless you're in a circus.  Then it's negotiable."
   / Yakko


CLI Options:


  FILE,EVERY/K/N,GRAY/S,HAM/S,DITHER/S,CYBERGFX/T,
  MODEID/K,WCP=WriteChunkyPixels/T,NOSOUND/S,NOWAIT/S,
  LOOP/S,VERBOSE/S,PUBSCREEN/K,WCENTER/S,AHI/T,FILTER/T,
  SOUNDONLY/S,PAUSE/S,NOQUIT/S,BUFFERED/S,GUI/T,
  SAVEVIDEO/K,SAVEAUDIO/K,NODOUBLEBUFFER/S,NOATTACHEDSCREENS/S


  FILE

    The filename of the animation to play.  If none is given,
    a file requester will be presented.


  EVERY/K/N

    A numeric argument limiting the programs desire to skip
    displaying frames in order to be able to keep up with the
    intended replay rate (and thus the soundtrack, if any).
    For example, EVERY=3 will make sure that no more than two
    subsequent frames are skipped at a time, mening that at
    least every 3:rd frame will be displayed.  EVERY=1 will
    cause all frames to be displayed no matter what.

GRAY/S

   A switch causing animations to be replayed in 256 grays,
   or at least as close to grays as the screen allows in
   the case of public or HAM screens.


HAM/S

   (Previously known as HAM8)  A switch causing true color
   animations to be replayed in HAM mode on non-CyberGraphX
   screens.  The conversion from true color to HAM is done
   "on the fly", so the CPU load will increase dramatically
   in this mode.  68060 recommended.


DITHER/S

   A switch adding a Floyd-Steinberg dithering step to the
   color cube replay mode.  Even slower than the HAM mode.


CYBERGFX/T

   A toggle to indicate whether you want the program to select
   a CyberGraphX screenmode or not.  The default is to use
   CyberGraphX screenmodes if cybergraphics.library is present,
   and AGA screenmodes if it is not.  So normally there is
   no need to specify this switch.


MODEID/K

   A screenmode that you want to use.  You can either
   specify a numeric mode ID (prefix with "0x" for
   hexadecimal), or an AmigaDOS pattern that should match
   the name of the mode.  If several modes match, a
   screenmode requester will be displayed.  If you select
   a CyberGraphX screenmode, but have selected NO for the
   CYBERGFX switch, true color replay will not be
   available.  For this case, you should make sure to use
   the WCP option as well.


WCP=WriteChunkyPixels/T

   A toggle to indicate whether the program should use its own
   chunky to planar code, or use the system routines.  A value
   of "on" will cause graphics.library/WriteChunkyPixels() to
   be used (AmigaOS3.1+ required), and a value of "off" means
   that the builtin routine should be used.  The default is to
   use WriteChunkyPixels() only if there is chunky to planar
   hardware present in the system.  (This switch has no effect
   for CyberGraphX screens, the appropriate CyberGraphX calls will
   always be used, unless CyberGraphX awareness is explicitly
   turned off using the CYBERGFX switch.)

NOSOUND/S

  A switch turning off sound replay.  It does not affect the
  timing of video playback in any other way than that it
  reduces the load on the CPU.


NOWAIT/S

  Ignore timing information for video playback and display all
  frames as quickly as possible.  No frames will be skipped,
  and no waiting will be done.  See also EVERY.


LOOP/S

  Specify this switch to play the animation over and over and
  over again...  (Press Ctrl-C in the CLI window to abort.)


VERBOSE/S

  Selecting this option will present information and statistics
  on stdout.  The following items will be displayed:

Information on type, name, resolution and bit depth for
all loaded codecs.

Selected screenmode - the name of the screenmode selected
  and the dimensions of the opened screen.

Expected duration - the number of seconds during which
  the animation is supposed to play.

Total replay time - the actual time during which the
  animation is played, including loops and pauses.

  For each track that was replayed will be showed:

Total number of samples - the number of samples in the track.

Nominal samplerate - an average samplerate calculated from
  the total number of samples and the expected
            duration.

Total idle time - the amount of time that the program has
  spent just waiting for the right time to display
  the next sample.

Total samplerate - the average rate at which the program has
  actually advanced the samples.

Visual samplerate - as above, but not counting samples that
  were skipped.

Virtual samplerate - a theoretical benchmark indicating the

    samplerate that could have been achieved if the
    NOWAIT switch had been given.

  Samples activated – total numer of samples delivered to
    screen or speakers.

  Samples skipped – total number of samples that were skipped.

    Note: All sps figures are truncated to integer values.


  PUBSCREEN/K

    The name of a public screen to replay the movie on.  There are
    no restrictions on the video or screen mode associated with
    this option anymore.


  WCENTER/S

    When selected, causes the window to be centered on the screen
    if replaying on a pubscreen.


  AHI/T

    Use ahi.device instead of audio.device to replay audio.
    Use only on machines which don't have a working audio.device
    (Draco?), or if you need 16bit output.  I don't know how it
    sounds with a sound card, but it sure sounds crappy with the
    Paula driver...


  FILTER/T

    Turn on/off the builtin low pass filter during replay.


  SOUNDONLY/S

    Don't show any video, just play the audio track.  This switch
    can now be combined with the NOSOUND switch...


  PAUSE/S

    Don't start playing the movie automatically.  The movie will
    appear paused at time = 0.  Use SPACE or the Play gadget to
    start playback.


  NOQUIT/S

    Don't exit after playing is completed.  qt will remain running
    with the movie paused at the end.  Use ESC, Ctrl-C, or the
    close gadget to quit qt.

BUFFERED/S

   Read all data chunks into memory before starting replay.
   Default is to read them in asynchronously as needed.  Make
   sure you have sufficient memory if using this option.


GUI/T

   Enable/disable GUI for movie transport control.  Default is
   GUI enabled when using a window on a public screen, and disabled
   when using a private screen.  Keyboard controls are always
   available regardless of the GUI setting.


SAVEVIDEO/K

   Store the video frames as a sequence of ILBM files instead of
   displaying them.  The value of the option is used as the
   filename of the first picture.  Subsequent filenames are
   generated by incrementing the index number at the end of the
   filename.  If the specified filename does not end with a
   number, ".001" is appended to it.


SAVEAUDIO/K

   Store the sound track as an 8SVX file instead of playing it.
   The value of the option is used as the filename for the
   sample.


NODOUBLEBUFFER/S

   Disable double buffering on AGA screens under OS3.0+.


NOATTACHEDSCREENS/S

   Disable use of attached screens for GUI under OS3.0+.
   Note that attached screens are neccessary to get
   double buffering on private screens when GUI is on.


Workbench ToolTypes:


  All CLI options described above can also be used as ToolTypes,
  with the exception of FILE (as the file is specified more
  directly).  Options of type /S are activated by their mere
  presence as a ToolType, the other options take values just like
  the CLI counterparts.

  ToolType examples:

```
WRITECHUNKYPIXELS=ON
EVERY=2
GRAY
```

## 1.6  License

```
"Ehhhh, but let's not be anal."
    / Slappy
```

qt may be freely distributed in its unmodified archived form.
The program may not however be sold for profit.

The program is provided on an as-is basis, and there is no guarantee
of functionality of any sort.

The author can not be held responsible for any physical or mental
damage incurred directly or indirectly from the use or misuse this
program.

Now, go ahead and have fun fun fun!  :)

## 1.7  Bug reports

```
                "The hotel of your mind has many vacancies"
      / Yakko
```

If you find something which you consider an obvious bug or
misfeature you may send me a bug report and perhaps I
will actually fix the problem for future releases.  :)
My address can be found in the
                next section
                    .

If you do decide to send a bug report, please make it as detailed
as possible.  Especially, if the problem is that qt won't play
a particular animation, a pointer to where that animation can be
found would be mostly appreciated.  Please don't write about not
being able to play Intel Indeo or Sørensen Video movies unless
you have the specifications and want to share them with me.  :-)

Also, check with the following list of known bugs that it is
not a bug of which I am already well aware.

Known bugs:

  Some people (with A1200:s, I may add) have experienced problems

with some movies when enabling the GUI on a private screen.  Should
this happen, first try the NOATTACHEDSCREENS option.  If that doesn't
work either, simply disable the GUI.


## 1.8  The author

                   "Woah!  Dumber than advertised..."
       / Dot


Here is my address and such:

  Marcus Comstedt
  Skomakargatan 6
  S-582 36  Linköping
  SWEDEN

  E-mail: marcus@lysator.liu.se
     WWW: http://www.lysator.liu.se/~marcus/


Feel free to drop a line if you have comments or
suggestions.  See also the section on
                Bug reports
                .
If you want to snail-mail me CD-R/DVD-R discs full of
movies then that's OK too.  ;-)


## 1.9  History

"Ehhhh, that snake doesn't have a leg to stand on.
 Hey!  It's the dawn of time.  What did you expect -- new jokes?"
    / Slappy


V1.0  1996-08-05
  - First official release

v1.1  1996-08-14
  - Fixed a bug in the startup code of all FPU versions.
  - Added the VERBOSE switch
  - The window is now automatically centered on non-CyberGraphX
    screenmodes
  - The MODEID switch is now much more versatile
  - Cleanup is now executed correctly if loading is aborted
    with Ctrl-C
  - Code to reject files that are not quicktimes improved.

- Removed some Enforcer hits when opening the screen

v1.2  1996-11-18
  - Fixed some more FPU bugs.
  - Replay in a window on a public screen is now possible with
    CyberGraphX.
  - Replay can be aborted with ESC/Ctrl-C/close gadget in the
    replay window, and not just from the CLI.
  - Now manages to recognize most nonstandard file layouts.
  - Added support for JPEG movies.  Fast CPU required...
  - Fixed a bug that caused 16 bit sound to be replayed
    incorrectly.
  - Added some kludges to work around the bug in
    cybergraphics.library which caused the "no appropriate
    screenmode" problem.

v1.3  1997-02-15
  - Support for compressed audio added (both MACE and IMA).
  - SMC video support implemented.
  - Added a resize gadget to the public screen window.
  - Added a Floyd-Steinberg dithering option
  - qt now supports the Workbench interface, complete with
    ToolTypes.  (And there was much rejoicing.)

v1.4  1997-03-23
  - Fixed a bug that produced incorrect video timing for some
    movies.
  - Implemented audio resampling for frequencies over 28kHz,
    so that replay will be the correct speed even when not
    using doublescan videomodes.
  - Added (limited) support for AHI.
  - Added a switch to turn on/off the audio LP filter.
  - Added a SOUNDONLY switch for people not wanting to be
    bothered by all this video nonsense...  :)
  - Recompiled with SAS/C 6.57
  - Included the "flatten" program.

v2.0  2000-07-11
  - Complete rewrite; all XAnim based code has been tossed
    out the window, player now uses a module based software
    architecture, all video codecs faster than before,
    audio/video synchronization much improved.
  - qt now defaults to playing directly from disk, heavily
    reducing memory requirements and upstart time.
  - Added support for AmigaOS 2.04.
  - Added support for OCS and ECS (68020+ still required).
  - Public screen replay is now possible for all screen
    modes.
  - Video can be saved as a sequence of ILBM images.
  - Audio can be saved as an 8SVX file.
  - Interactive transport control (pause and seek) added.
  - Nice GUI for improved transport control added.
  - New switches: PAUSE, NOQUIT, BUFFERED, GUI,
    SAVEVIDEO, SAVEAUDIO
  - HAM8 switch renamed to HAM, due to OCS/ECS support.
  - Stereo sound now possible with both audio.device and AHI.
  - 16bit sound implemented for AHI audio mode.

  – Proper implementation of stereo IMA4 sound.
  – GRAY switch now always enables grayscale playback.
  – Dither/HAM replay now possible for palette based movies
    as well.
  – Double buffering now used for native screenmodes.
  – MacBinary files can now be played directly.

## 1.10  Future

Pinky: "Where are you going, Brain?"
Brain: "Back to our cage, Pinky.  We must plan for tomorrow night."
Pinky: "Why?  What are we going to do tomorrow night?"
Brain: "Same thing we do every night, Pinky.  Try to take over the world!"

Although I am pretty pleased with the program the way it is now,
here are some improvements that I may decide to implement:

  · More video codecs
  · PPC support

And here are some suggestions from other people which might or
might not get implemented.  I'm just listing them here so that
you don't have to suggest them too...  :)

  · Providing a Datatype as well
  · Support for AVIs